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EXAMINER

TSANG FOSTER, SUSY N

ART UNIT

PAPER NUMBER

1745

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12

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/719,721

Applicant(s)

YOSHIMURA ET AL.

Examiner

Susy N Tsang-Foster

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 April 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) 10,12-15,17,18 and 21-26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9,11,16,19 and 20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION***Election/Restrictions***

1. Applicant's election with traverse of Group I, claims 1-9, 11, 16, 19, and 20 in Paper No. 11 is acknowledged. The traversal is on the ground(s) that the amended claims of Group I and Group II include the special technical feature of "a cooling fluid for cooling down the inside of the fuel cells is introduced as a fluid passing through the flow path defined by at least one of the rugged shapes" to define over Yoshimura and that this should be considered as a unifying special technical feature common to both Groups I and II. This is not found persuasive because the added limitation "a cooling fluid for cooling down the inside of the fuel cells is introduced as a fluid passing through the flow path defined by at least one of the rugged shapes" does not further limit the structure of the gas separator and is not a technical feature of the gas separator but an intended use of the gas separator.

Nevertheless, Walsh (US 6,096,450) discloses a gas separator having rugged shapes that are formed in both faces of the separator to define a flow path of a fluid passing through the inside of a fuel cell where one side of the gas separator is used for a cooling fluid for cooling down the inside of the fuel cell (col. 5, lines 35-45 and Figure 2). Thus, since the special technical feature does not define a contribution over the prior art as shown by US Pat. No. 6,096,450 to Walsh, no single general inventive concept exists and unity of invention is lacking. Furthermore, Meyer et al. (US 5,503,944) disclose a gas separator having rugged shapes that are formed in both faces of the separator to define a flow path of a fluid passing through the inside of a fuel cell where one side of the gas separator is used for a cooling fluid for cooling down the

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inside of the fuel cell (see Figures 2 and 3). Thus, since the special technical feature does not define a contribution over the prior art as shown by US Pat. No. 5,503,944 to Meyer et al., no single general inventive concept exists and unity of invention is lacking.

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 10, 12-15, 17, 18, and 21-26 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 11.

Response to Amendment

3. This Office Action is responsive to the amendment filed on and to the election filed on -. Claims 1, 4-14, and 16-26 have been amended. Claims 1-26 are pending. Claims 10, 12-15, 17, 18, and 21-26 are withdrawn from consideration as being drawn to a non-elected invention. Claims 1-9, 11, 16, 19, and 20 are rejected for reasons below.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1-9, 11, 16, 19, and 20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled

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in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In claims 1-7, the limitation “at least two plates with the rugged shapes” is not in the original disclosure. In claims 8, 9, 11, 16, 19, and 20, the limitation “at least two plates that have the rugged shapes” is not in the original disclosure. Instead, the specification originally discloses two plates that have the rugged shapes and does not disclose at least two plates that have the rugged shapes (see for example, page 3, lines 9-23, pages 5-8 of the substitute specification).

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-9, 11, 16, 19, and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 1-9, 11, 16, 19, and 20, the limitation “a cooling fluid for cooling down the inside of the fuel cells is introduced as a fluid passing through the flow path defined by at least one of the rugged shapes” is indefinite because one rugged shape does not define a flow path but a plurality of rugged shapes are necessary to define a flow path.

In claim 5, the limitation “wherein the fluid passing through the flow path defined by the rugged shapes in said fuel cells is one of a hydrogen containing gaseous fuel, an oxygen containing oxidizing gas, and a cooling fluid for cooling down the inside of said fuel cells” is indefinite because it is unclear how the gas separator of claim 1 is a gas separator when both

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sides of the separator have cooling fluid passing through the flow path defined by the rugged shapes. Claim 1 already recites a cooling fluid for cooling down the inside of the fuel cells is introduced as a fluid passing through the flow path defined by at least one of the rugged shapes”.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1-5, 7-9, 11, 16, and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Wilkinson et al. (US 5,521,018).

Wilkinson et al. disclose a gas separator for a fuel cell wherein two plates of graphite foil are laminated with a metal foil layer interposed between the two plates of graphite foil (see abstract; Figures 5a, 5b, 7a and 7b; col. 5, lines 29-35). The lamination bonds the two plates of graphite foil and the metal foil layer with one another. Wilkinson et al. also disclose that graphite foils comprise an embossed surface (rugged shapes) (col. 6, lines 37-56). Wilkinson et al. also disclose that other suitable electrically conductive material sufficiently soft so as to permit embossing can be used as the two outer layers of the separator such as corrosion resistant

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metals such as niobium and somewhat corrosive resistant metals such as copper (col. 10, lines 24-39). The gas separator may be used as a flow field plate for fuel or oxidant or coolant (col. 11, lines 15-39 and col. 12, lines 10-34).

10. Claims 1-9, 11, 16, 19, and 20 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Yoshimura et al. (US 6,291,094 B1).

It is noted a preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951). In claims 1-9, 11, 16, 19, and 20, the intended use of the gas separator for a fuel cells is not given patentable weight.

See Figures 4-11 and col. 6, line 6 to col. 16, line 35 of the reference.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1, and 3-5 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Mukohyama et al. (US 5,798,188).

It is noted a preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951). In claims 1 and 3-5, the intended use of the gas separator for a fuel cells is not given patentable weight.

The product-by-process limitations of claims 1 and 3-5 are not given patentable weight since the courts have held that patentability is based on a product itself, even if the prior art product is made by a different process (see *In re Thorpe*, 227 USPQ 964, (CAFC 1985), *In re Brown*, 173 USPQ 685 (CCPA 1972), and *In re Marosi*, 218 USPQ 289, 292-293 (CAFC 1983)).

Mukohyama et al. disclose a gas separator comprising rugged shapes that are formed in both faces of the separator to define a flow path of a fluid and two metal layers (reference label 4 in Figure 1) with rugged shapes are formed in respective one faces of the gas separator. The gas separator also comprises an aluminum plate 2 and polymer projections (a member) located in a space defined by the rugged shapes (see col. 1, lines 15-30; col. 3, lines 5-35; col. 5, lines 19-29). The aluminum plate and the polymer projections are inherently thermally conductive.

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13. Claims 1, 3-5, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mukohyama et al. (US 5,798,188) in view of Walsh (US 6,096,450).

Alternatively, fuel cells is given patentable weight for claims 1, 3-5, and 7.

Mukohyama et al. disclose all the limitations of claims 1, 3-5, and 7 except that a cooling fluid for cooling down the inside of the fuel cells is introduced as a fluid passing through one of the flow path defined by the rugged shapes on one surface of the gas separator. Mukohyama et al. disclose that the gas separator is a bipolar plate for supplying and discharging fuel and an oxidizing agent (see col. 2, lines 35-46).

Walsh teaches that a fluid flow plate for a fuel cell may be bipolar, monopolar, combined monopolar such as an anode cooler or cathode cooler, or a cooling plate and that flow channels of the fluid flow plate can carry reactant gases, as well as liquid and the function of the fluid flow plate is a matter of design choice for a fuel cell system (col. 5, lines 35-45 and col. 9, lines 64-67 and col. 10, lines 1-16).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the gas separator plate of Mukohyama et al. as a cathode or anode cooling plate having cooling fluid for cooling down the inside of the fuel cells because cooling of a fuel cell stack is necessary for proper temperature maintenance of a fuel cell stack during normal operation and gas separator plates (flow field plates) in the fuel cell art are adaptable for a variety of uses such as a bipolar, monopolar, combined monopolar such as an anode cooler or cathode cooler, or a cooling plate depending on the requirements of a fuel cell system.

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14. Claims 1-9, 11, 16, 19, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshimura et al. (US 6,291,094 B1) in view of Walsh (US 6,096,450).

Alternatively, fuel cells is given patentable weight for claims 1-9, 11, 16, 19, and 20.

Yoshimura et al. disclose all the limitations of claims 1-9, 11, 16, 19, and 20 except that a cooling fluid for cooling down the inside of the fuel cells is introduced as a fluid passing through one of the flow path defined by the rugged shapes on one surface of the gas separator.

Yoshimura et al. disclose that the gas separator is a bipolar plate for supplying and discharging fuel and an oxidizing agent (col. 4, lines 48-61).

Walsh teaches that a fluid flow plate for a fuel cell may be bipolar, monopolar, combined monopolar such as an anode cooler or cathode cooler, or a cooling plate and that flow channels of the fluid flow plate can carry reactant gases, as well as liquid and the function of the fluid flow plate is a matter of design choice for a fuel cell system (col. 5, lines 35-45 and col. 9, lines 64-67 and col. 10, lines 1-16).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the gas separator plate of over Yoshimura et al. as a cathode or anode cooling plate having cooling fluid for cooling down the inside of the fuel cells because cooling of a fuel cell stack is necessary for proper temperature maintenance of a fuel cell stack during normal operation and gas separator plates (flow field plates) in the fuel cell art are adaptable for a variety of uses such as a bipolar, monopolar, combined monopolar such as an anode cooler or cathode cooler, or a cooling plate depending on the requirements of a fuel cell system.

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15. Claims 6 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilkinson et al. (US 5,521,018) in view of Cisar et al. (US 6,146,780).

Wilkinson et al. disclose all the limitations of claims 6 and 20 except that the two plates are composed of stainless steel.

Wilkinson et al. also teaches that the two plates are suitably electrically conductive material sufficiently soft so as to permit embossing can be used such as corrosion resistant metals such as niobium and somewhat corrosive resistant metals such as copper (col. 10, lines 24-39).

Cisar et al. teach that bipolar separator plates are typically made from a variety of metals such as stainless steel (col. 1, lines 15-20).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the two plates of the separator of Wilkinson et al to be made of stainless steel because stainless steel is a corrosion resistant metal for a fuel cell system.

16. Claims 6 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilkinson et al. (US 5,521,018) in view of Wilson et al. (US 6,037,072) .

Wilkinson et al. disclose all the limitations of claims 6 and 20 except that the two plates are composed of aluminum.

Wilson teaches a bipolar separator plate made of aluminum that adequately withdraws heat from a fuel cell (col. 2, lines 39-46).

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the two plates of the separator of Wilkinson et al to be made of aluminum because aluminum is lightweight and has sufficient thermal conductivity to withdraw heat away from the fuel cell.

Response to Arguments

Applicant's arguments filed 1/3/2003 have been fully considered but they are not persuasive.

Applicant's arguments regarding claims 21-23 that were rejected in the previous office action as being anticipated by Tajima of record are moot since these claims are withdrawn from further consideration.

Regarding claims 1-7 as being anticipated by Mukohyama et al., applicant's arguments are moot in view of the new grounds of rejection given above.

Applicant's arguments regarding claims 12-15, 21-23, 25, and 26 that were rejected in the previous office action as being anticipated by Bossel of record are moot since these claims are withdrawn from further consideration.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., Wilkinson does not disclose providing two plates, laying the two plates on each other via a material that forms a member and press molding the two plates so as to form rugged shapes simultaneously with bonding the two plates together) are not recited in the rejected claim(s). Although the

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claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

It is noted that the feature of providing two plates, laying the two plates on each other via a material that forms a member and press molding the two plates so as to form rugged shapes simultaneously with bonding the two plates together is not an elected invention encompassed by claims 1-9, 11, 16, 19, and 20 that are presently considered.

Applicant's arguments regarding Yoshimura et al. are moot in view of the new grounds of rejection given above.

Conclusion

Any inquiry concerning this communication or earlier communications should be directed to examiner Susy Tsang-Foster, Ph.D. whose telephone number is (703) 305-0588. The examiner can normally be reached on Monday through Thursday from 9:30 AM to 8:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached at (703) 308-2383. The phone number for the organization where this application or proceeding is assigned is (703) 305-5900.

The fax phone numbers for the organization where this application or proceeding is assigned is (703) 872-9310 for regular communications and (703) 872-9311 for After-Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

A2/June 29, 2003
Susy Tsang-Foster